

WHAT IS CLAIMED IS:

1. A method of producing a nutritive medium powder, said method comprising agglomerating a dry powder nutritive medium with a solvent.

5 2. A method of producing a nutritive medium supplement powder, said method comprising agglomerating a dry powder nutritive medium supplement with a solvent.

3. A method of producing a nutritive medium subgroup powder, said method comprising agglomerating a dry powder nutritive medium subgroup with a solvent.

10 4. A method of producing a buffer powder, said method comprising agglomerating a dry powder buffer with a solvent.

5. A method of producing a nutritive medium powder, said method comprising spray-drying a liquid nutritive medium.

15 6. A method of producing a nutritive medium supplement powder, said method comprising spray-drying a liquid nutritive medium supplement.

7. A method of producing a nutritive medium subgroup powder, said method comprising spray-drying a liquid nutritive medium subgroup.

20 8. A method of producing a buffer powder, said method comprising spray-drying a liquid buffer solution.

9. The method of any one of claims 5-8, further comprising agglomerating said powder with a solvent.

10. The method of any one of claims 5-8, wherein said spray-drying is performed under conditions of controlled temperature and humidity.

11. The method of any one of claims 1-8, further comprising packaging said powder.

5 12. The method of any one of claims 1-8, further comprising sterilizing said powder.

13. The method of claim 12, wherein said sterilization is performed after packaging said powder.

10 14. The method of claim 12, wherein said sterilization is accomplished by irradiation of said powder with gamma rays until said powder is rendered substantially sterile.

15. The method of claim 1 or claim 5, further comprising adding at least one medium supplement to said agglomerated nutritive medium by spray-drying said supplement onto said agglomerated medium.

15 16. The method of claim 1 or claim 5, further comprising adding an acid or base to said nutritive medium by agglomerating said acid or base into said nutritive medium.

20 17. The method of claim 1 or claim 5, wherein said nutritive medium powder is a cell culture medium powder selected from the group consisting of a bacterial cell culture medium powder, a yeast cell culture medium powder, a plant cell culture medium powder and an animal cell culture medium powder.

18. The method of claim 1 or claim 5, wherein said nutritive medium comprises one or more ingredients selected from the group consisting of serum,

L-glutamine, insulin, transferrin, a lipid, a cytokine, a neurotransmitter and a buffer.

19. The method of claim 2, wherein said nutritive medium supplement is serum.

5 20. The method of claim 3, wherein said nutritive medium supplement is serum.

21. The method of claim 15, wherein said nutritive medium supplement is serum.

10 22. The method of any one of claims 19-21, wherein said serum is bovine serum or human serum.

23. The method of claim 22, wherein said bovine serum is fetal bovine serum or calf serum.

24. The method of claim 18, wherein said buffer is sodium bicarbonate.

15 25. The method of claim 4 or claim 8, wherein said buffer powder is a buffered saline powder.

26. The method of claim 25, wherein said buffered saline powder is a phosphate-buffered saline powder or a Tris-buffered saline powder.

27. A nutritive medium powder prepared according to the method of claim 1.

20 28. A nutritive medium powder prepared according to the method of claim 5.

29. A nutritive medium powder prepared according to the method of claim 9.

30. A nutritive medium powder prepared according to the method of claim 16.

5 31. An automatically pH-adjusting nutritive medium powder.

32. The nutritive medium powder of claim 31, wherein said powder comprises at least one buffer salt.

33. The nutritive medium powder of claim 32, wherein said buffer salt is sodium bicarbonate.

10 34. The nutritive medium powder of any one of claims 27-31, wherein said nutritive medium powder comprises at least one buffer salt.

35. The nutritive medium powder of claim 34, wherein said buffer salt is sodium bicarbonate.

15 36. The nutritive medium powder of any one of claims 27-31, wherein said nutritive medium has a pH of between 7.1-7.5 when said medium is reconstituted with a solvent.

37. A nutritive medium supplement powder prepared according to the method of claim 2.

20 38. A nutritive medium supplement powder prepared according to the method of claim 3.

39. A nutritive medium subgroup powder prepared according to the method of claim 3.

40. A nutritive medium subgroup powder prepared according to the method of claim 7.

41. A nutritive medium subgroup powder prepared according to the method of claim 9.

5 42. A buffer powder prepared according to the method of claim 4.

43. A buffer powder prepared according to the method of claim 8.

44. The nutritive medium supplement powder of claim 37 or claim 38, wherein said nutritive medium supplement is serum.

10 45. The nutritive medium supplement powder of claim 44, wherein said serum is bovine serum or human serum.

46. The nutritive medium supplement powder of claim 45, wherein said bovine serum is fetal bovine serum or calf serum.

15 47. The nutritive medium supplement powder of claim 37 or claim 38, wherein said nutritive medium supplement powder comprises one or more nutritive medium components.

48. A method of culturing a cell comprising reconstituting the nutritive medium powder of any one of claims 27-31 with a solvent to form a liquid solution and contacting the cell with said liquid solution under conditions favoring the cultivation of the cell.

20 49. The method of claim 48, wherein said solvent comprises serum or water.

50. The method of claim 48, wherein said cell is selected from the group consisting of a bacterial cell, a yeast cell, a plant cell and an animal cell.

51. The method of claim 50, wherein said animal cell is an insect cell, a nematode cell or a mammalian cell.

5 52. The method of claim 51, wherein said mammalian cell is selected from the group consisting of a CHO cell, a COS cell, a VERO cell, a BHK cell, an AE-1 cell, an SP2/0 cell, an L5.1 cell, a hybridoma cell, and a human cell.

53. The method of claim 48, wherein said cell is an anchorage-dependent cell.

10 54. The method of claim 48, wherein said cell is an anchorage-independent cell.

55. The method of claim 48 wherein said cell is selected from the group consisting of a normal cell, a diseased cell, a transformed cell, a mutant cell, a somatic cell, a germ cell, a stem cell, a precursor cell and an embryonic cell.

15 56. A method of producing a sterile nutritive medium supplement powder, comprising:

(a) obtaining a nutritive medium supplement powder to be sterilized; and

20 (b) sterilizing said powder by irradiation of said powder with  $\gamma$  rays until said powder is rendered sterile.

57. The method of claim 56, wherein said nutritive medium supplement powder is prepared by lyophilizing a liquid nutritive medium supplement.

58. The method of claim 56, wherein said nutritive medium supplement powder is prepared by spray-drying a liquid nutritive medium supplement.

59. The method of claim 56, wherein said nutritive medium supplement powder is prepared by agglomerating a powdered nutritive medium supplement.

60. A sterile nutritive medium supplement powder prepared according to the method of claim 56.

5 61. The sterile nutritive medium supplement powder of claim 60, wherein said powder is selected from the group consisting of a serum powder, a cytokine powder, an insulin powder, a lipid powder, an animal organ extract powder, an animal gland extract powder, an animal tissue extract powder, an enzyme powder and a transferrin powder.

10 62. The sterile nutritive medium supplement powder of claim 60, wherein said powder is a serum powder.

63. The sterile nutritive medium supplement powder of claim 61 or claim 62, wherein said serum powder is a bovine serum powder or a human serum powder.

15 64. The sterile nutritive medium supplement powder of claim 63, wherein said bovine serum powder is a fetal bovine serum powder or a calf serum powder.

20 65. The sterile nutritive medium supplement powder of claim 61, wherein said cytokine powder is a growth factor powder, an interleukin powder, a colony-stimulating factor powder or an interferon powder.

66. The sterile nutritive medium supplement powder of claim 61, wherein said lipid powder is a phospholipid powder, a sphingolipid powder, a fatty acid powder or a cholesterol powder.

67. The sterile nutritive medium supplement powder of claim 61, wherein said animal gland extract powder is a bovine pituitary extract powder.

68. The sterile nutritive medium supplement powder of claim 61, wherein said enzyme powder is a trypsin powder, a collagenase powder, a  
5 pancreatinin powder or a dispase powder.

69. The sterile nutritive medium supplement powder of claim 60, wherein said powder is a transferrin powder.

70. A kit for use in the cultivation of a cell, said kit comprising one or more containers wherein a first container contains the powder of any one of claims  
10 27-31, 37-43 or 60.

71. The kit of claim 70, further comprising one or more additional containers containing one or more cells.

72. The kit of claim 70, further comprising one or more additional containers containing one or more solvents.

15 73. A method of producing a dry cell powder comprising at least one cell, said method comprising:

(a) obtaining a cell to be dried;  
(b) forming a cell suspension by suspending said cell in an aqueous solution; and  
20 (c) producing a powder by spray-drying said cell suspension.

74. The method of claim 73, further comprising contacting said cell with at least one stabilizing or preserving compound.

75. The method of claim 74, wherein said stabilizing or preserving compound is a polysaccharide.

76. The method of claim 75, wherein said polysaccharide is trehalose.

77. The method of claim 74, wherein said cell is contacted with the stabilizing or preserving compound by spray-drying or agglomerating the compound onto said dry cell powder.

5 78. The method of claim 73, wherein said aqueous solution comprises one or more components selected from the group consisting of a buffer, a salt, a nutritive medium component and a nutritive medium supplement.

79. The method of claim 73, further comprising agglomerating said dry cell powder with a solvent.

10 80. The method of claim 79, wherein said solvent is selected from the group consisting of a buffer solution, a salt solution, a nutritive medium supplement solution, a nutritive medium solution, and a combination thereof.

81. The method of claim 78 or claim 80, wherein said nutritive medium supplement is serum.

15 82. The method of claim 81, wherein said serum is bovine serum or human serum.

83. The method of claim 82, wherein said bovine serum is fetal bovine serum or calf serum.

20 84. The method of claim 73, wherein said cell is a bacterial cell, a yeast cell, an animal cell or a plant cell.

85. The method of claim 84, wherein said animal cell is an insect cell, a nematode cell or a mammalian cell.

86. The method of claim 85, wherein said mammalian cell is a human cell.

87. The method of claim 85, wherein said mammalian cell is a non-human cell.

5 88. The method of claim 73, wherein said cell is selected from the group consisting of a normal cell, a diseased cell, a transformed cell, a mutant cell, a somatic cell, a germ cell, a stem cell, a precursor cell and an embryonic cell.

89. The method of claim 73, wherein said cell is an anchorage-dependent cell.

10 90. The method of claim 73, wherein said cell is an anchorage-independent cell.

91. A dry cell powder prepared according to the method of claim 73.